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10/772,595

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Rebecca A. Bellas

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Date:

August 1, 2006 Rebecca A. Bellas

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application

Applicant:	Bokisa, et al.	:	Art Unit:	1753
Serial No.:	10/772,595	:	Examiner:	Edna Wong
Filed:	February 5, 2004	:		
Title:	ELECTROPLATED QUATERNARY ALLOYS			

**Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

REPLY BRIEF

Dear Sir:

Appellants' representative submits this Reply Brief in response to the Examiner's Answer dated June 19, 2006.

REMARKS

Claims 1-13 and 15-26 are currently pending in the subject application and are presently under consideration. Favorable reconsideration of the subject patent application is respectfully requested in view of the comments herein.

A. Rejection of Claims 1-6, 8, and 24 Under 35 U.S.C. §103(a)

Claims 1-6, 8, and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP '693 in view of Passal. It is respectfully submitted that this rejection should be reversed for at least the following reasons. JP '693 and Passal, individually and in combination, do not teach or suggest all the features of the claimed invention.

The obviousness analysis is based on four underlying factual inquiries, the well-known Graham factors: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). In assessing the question of obviousness, it must be kept in mind that cited art gives only general guidance, and is not at all specific as to particular form of the claimed invention and how to achieve it, may make a certain approach obvious to try, but does not make the invention obvious, *Ex parte Obukowicz*, 27 USPQ2d 1063 (BPAI 1993).

First, the Examiner incorrectly determines the scope and the content of the cited art. The Examiner responds in the Examiner's Answer that JP '693 teaches a quaternary Ni-Co alloy since JP '693 teaches that nickel alloy electroplating bath consists of a nickel salt and a water-soluble of one or more elements selected from boron, cobalt, copper, iron, manganese, phosphorus, tin, and zinc (page 17 of the Examiner's Answer). Applicants respectfully disagree.

JP '693 does not mention any quaternary alloy including a quaternary Ni-Co alloy. An English translation of a portion of Table 1 of JP '693 is provided below. In Table 1, some electroplating baths contain boric acid. In the electroplating art, boric acid can be used to improve conductivity and/or can be used as a pH adjuster, but the boric acid does not provide a significant portion of

platable boron. Table 1 of JP '693 does teach a binary alloy containing Ni-Co (No.5 of Table 1). However, Table 1 does not teach or suggest any ternary or quaternary Ni-Co alloy.

A portion of Table 1 of JP '693

1	NiSO ₄	NiCl ₂	H ₃ BO ₃	Cetyl pridinium bromide			
2	Nickel sulfamate	NH ₄ Cl ₂	H ₃ BO ₃	Benzyl pyridinium bromide			
3	NiCl ₂	NH ₄ Cl ₂	H ₃ BO ₃	Cetyl picolinium chloride			
4	NiSO ₄	LiCl	Succinic acid	Ammonia water	Dimethyl amine borane	Chloro-4- hydroxy-1- lauryl pyridinium	
5	NiSO ₄	NiCl ₂	Ni(HCOO) ₂	CoSO ₄	(NH ₄)SO ₄	H ₃ BO ₃	Cetyl quinolium chloride
6	Ni(CH ₃ COO) ₂	Cu(CH ₃ COO) ₂	Lauryl isoquinolium bromide				
7	NiSO ₄	NiCl ₂	H ₃ BO ₃	FeSO ₄	Chloro-1- octyl pridazine		
8	Nickel sulfamate	MnSO ₄	H ₃ BO ₃	Chloro-1- Cetyl-1,3,5- triazine			
9	NiSO ₄	NiCl ₂	H ₃ BO ₃	Phosphorous acid	Chloro-2- lauryl cinnoline		
10	NiSO ₄	SnCl ₂	Citric acid	Glycine	H ₃ BO ₃	Lauryl acridine bromide	
11	NiSO ₄	ZnSO ₄	H ₃ BO ₃	Bromo-1- lauryl phenazine			
12	NiCl ₂	H ₃ BO ₃					
13	NiSO ₄	NiCl ₂	H ₃ BO ₃				
14	Nickel sulfamate	NiCl ₂	H ₃ BO ₃				

Moreover, JP '693 does not teach any electroplating bath containing four platable metal ions. More importantly, JP '693 does not teach that a quaternary

alloy can be obtained by using electroplating baths disclosed in JP '693. While JP '693 teaches that nickel alloy electroplating bath consists of a nickel salt and a water-soluble of one or more elements selected from boron, cobalt, copper, iron, manganese, phosphorus, tin, and zinc, JP '693 does not mention that a quaternary alloy including Ni-Co quaternary alloy can be obtained by the nickel alloy electroplating baths. In the electroplating art, it is difficult to obtain a quaternary alloy as discussed below.

A cited reference must be considered in its entirety *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). JP '693 must be considered in its entirety. Regardless of the JP '693 text cited by the Examiner that appears to be favorable to her position, all other portions of JP '693 teaches electroplating baths containing one or two platable metal ions. Accordingly, JP '693 does not teach or suggest a quaternary Ni-Co alloy.

The Examiner responds in the Examiner's Answer that Passal teaches a quaternary Ni-Co-B-Zn alloy since the solution of Example 8 contains ionic nickel, ionic cobalt, ionic boron, and ionic zinc (page 17 of the Examiner's Answer). Applicants respectfully disagree.

The Examiner also incorrectly determines the scope and the content of Passal. Passal states: "This invention relates to improved processes and compositions for the electrodeposition of nickel, cobalt, and alloy thereof" (Col. 1, lines 43-45 of Passal). Although the Examiner contends that Passal teaches a quaternary Ni-Co-B-Zn alloy, Passal consistently uses the term "alloy of nickel and cobalt," for example, Col. 2, line 24 in the disclosure. Passal does teach a binary Ni-Co alloy. However, Passal does not mention any quaternary alloy including a quaternary Ni-Co alloy.

With respect to the boric acid in Example 8, as discussed above, one skilled in the electroplating art would know that the boric acid is used to improve conductivity and/or used as a pH adjuster, but it does not provide a significant portion of platable boron. One skilled in the art would not use boric acid as a boron source for plating boron.

For ionic zinc in Example 8, the zinc is added to the bath as “metallic impurities” or “metallic contaminant” (Col. 1, lines 51-58). Passal relates to “improving the tolerance of the [electroplating] bath to metallic ions such as zinc ions” (Col. 7, lines 36-37). Zinc is not added to the bath as a platable metal ion. Therefore, Example 8 of Passal does not teach a quaternary Ni-Co-B-Zn alloy.

Second, the Examiner incorrectly determines the level of ordinary skill in the pertinent art in assessing the question of obviousness. The Examiner contends that JP ‘693 teaches a quaternary Ni-Co alloy, and from this, the Examiner concludes that it would have been obvious to one skilled in the art to arrive at the claimed invention by replacing the quaternary ammonium salt brightener of JP ‘693 with the acetylenic brightener of Passal. Applicants respectfully disagree.

In the metal plating arts, the number of alloy species and the kind of alloy species substantially affect the characteristics of the alloy electrodeposit. Alloy-modifying agents, such as brighteners, substantially affect the nature of the alloy coating. In other words, a high degree of UNPREDICTABILITY exists in the electroplating art. For example, while a certain brightener may improve a binary alloy electroplating, the brightener may not improve a quaternary alloy electroplating.

In addition, in the metal plating arts, it is generally difficult to obtain a multi-metal alloy such as a quaternary alloy. For example, US Patent No. 6,677,056 states that “it is difficult to control the composition of the ternary or quaternary alloy in plating solution” (Col. 2, lines 31-33 of US Patent No. 6,677,056). US Patent No. 5,763,906 states that “quaternary alloys . . . are frequently difficult to obtain” (Col. 2, lines 24-25 of US Patent No. 5,763,906). US Patent No. 5,625,635 states that “[a] disadvantage of using quaternary alloys for the formation of infrared emitting devices is that quaternary alloys are much more difficult to grow than ternary alloys” (Col. 1, lines 40-42 of US Patent No. 5,625,635).

The binary Ni-Co alloy of Example 8 of Passal that is incorrectly viewed as a quaternary Ni-Co-B-Zn alloy by the Examiner "was very non-uniformly milky to dull and only partial low current density coverage was obtained" (Col., 11, line 74 - Col., 12, line 1 of Passal). Thus, Passal teaches that adding an acetylenic compound to a Ni-Co binary alloy electroplating bath is not effective for improving the appearance of the Ni-Co alloys.

Passal describes four generic groups and ten specific compounds of primary brighteners, four generic groups and five specific compounds of secondary brighteners, and twelve generic groups and seven specific compounds of auxiliary secondary brighteners. Passal does not teach any specific function for any specific primary brighteners, secondary brighteners, and secondary auxiliary brighteners. Thus, there is no teaching of any particular function of acetylenic brighteners by Passal.

Contrary to the Examiner's assertion, it would NOT have been obvious for one skilled in the art to modify JP '693 by selecting an acetylenic brightener from among the many brighteners described in Passal in order to arrive at the claimed invention. The Examiner's position represents hindsight reconstruction or, at best, establishes that it would have been "obvious to try" various combinations of multiple metal ions and brighteners.

B. Other Rejections

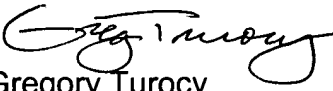
All the other rejections are based on the Examiner's assertion that the cited art teaches a quaternary Ni-Co alloy. However, the Examiner has incorrectly determined the scope and the content of the cited art as discussed above. Since the cited art does not teach any quaternary alloy including a quaternary Ni-Co alloy, reversal of the rejections is respectfully requested.

CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited art. Accordingly, it is respectfully requested that the rejections of claims 1-13 and 15-26 be reversed.

If any additional fees are due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063.

Respectfully submitted,
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